

**REMARKS:**

Claims 49 and 51-67 are in the case and presented for consideration.

Claims 49 and 52-67 have been amended.

Claims 1-48 and 50 were previously canceled, subject to Applicant's right to pursue their subject matter in one or more continuing applications.

Claims 49, 58, and 59 have been amended to highlight that the shrink film is biaxially-oriented. Support for these amendments may be found at least at paragraph [0002] of the published application. These claims, as well as those which depend therefrom, have been amended to highlight that the third barrier layer G consists a polyamide polymer. Support for these amendments may be found at least at paragraph [0036] of the published application. Independent claims 49, 58, and 59 have also been amended to highlight that the polyamide polymers have yield points greater than 25 MPa and elastic moduli greater than 3500 MPa. Support for these amendments may be found at least at paragraph [0066] of the published application. Independent claims 49, 58, and 59 have also been amended to clarify that layers A to G make up 100% of the thickness of the film. Support for these amendments may be found at least at paragraph [0036] of the published application.

**Claim Objections**

Claim 63 is objected to for being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant has amended claim 63 so that it properly depends from claim 49.

Claims 49, 58-60, and 62 are objected to due to certain informalities, which Applicant has corrected.

Therefore all claims are now believed to be in proper form.

**Rejections Under 35 U.S.C. §102(b)**

Claims 49 and 51 have been rejected under 35 U.S.C. 102(b) as being anticipated by European Patent No. 0800915 to Shepard et al. ("Shepard et al.") taken in view of the evidence given in DUPONT Surlyn.

Applicant respectfully traverses these rejections.

The films of the presently-claimed invention are biaxially oriented, unlike the films disclosed in Shepard et al. The films have been subjected to a process that makes polymers oriented in the machine direction and the traverse direction and also leads to post-recrystallization of the polymers. The said processes involve polymer chains being drawn, oriented and recrystallized. The forced change in the structural organization and the recrystallization has a great effect on polymer performance. The said arrangement of polymer chains also involves an improved barrier effect. This is because when polymer chains are aligned, there is much less free room among polymer chains. Thus, molecules of gas and vapor will be impeded from crossing the polyamide layer. In other words, the layer will be less permeable to gas and vapor. Hence, the polyamide polymers forming the layers in the claimed film exhibit a structural organization and a degree of crystallinity different from those polyamide polymers that have not been subjected to these processes.

In contrast to the films of the presently-claimed invention, the end-product described in Shepard et al. is a non-biaxially-oriented film. In fact, the film disclosed in Shepard et al. is produced by coextrusion in a tubular form. Afterwards inflating the tube with air is carried out only once. Subsequent inflating is disclosed nowhere in

Shepard et al. In other words, the disclosed process is a single-bubble process.

As a result of the different process of producing the films, the films according to the present invention possess a structural organization different from those of films disclosed in Shepard et al. The difference in the structural organization also implies different properties and performances of polymers.

Thus, Applicant respectfully submits that, in view of the above-noted differences, the films as presently claimed in claims 49 and 51 are novel over the films disclosed in Shepard et al.

#### **Rejections Under 35 U.S.C. §103(a)**

Claims 59 and 63 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Shepard et al.

Applicant respectfully traverses these rejections.

The films of the presently-claimed invention are used for food packaging. One of the goals of the presently-claimed invention is to produce a film that curls as little as possible or not at all when the packaging is opened. In other words, it is desirable that the film is as flat as possible after opening of the packaging. The packaging may be, for example, a tray closed within a film according to the present invention.

Of course, it is also advantageous that the films exhibit a number of other properties, such as good transparency, heat-shrinkability, good gas- and vapor- barrier properties.

The films taught by Shepard et al. shrink or tightly wrap around the product when they are used in the packing of a product, more specifically films are subjected to thermoforming operations (see column 1, lines 9-10, and column 8, lines 33-44).

Shephard et al. emphasize that the films also possess better optical properties, i.e. higher clarity and lesser haze (see column 4, line 39). It is well-known that the higher clarity, the less crystalline the polymer is (see also column 8, lines 45-49).

It is noted that Shepard et al. does not teach or suggest how to prevent curling. For this reason, a skilled artisan would not have been motivated to form the claimed films from the teaching of Shepard et al.

Shepard et al. do not suggest producing biaxially-oriented films because such an orientation would have increased crystallinity and, hence, decreased clarity. In fact, the teaching of Shepard et al. is diametrically opposed to the solutions proposed by the presently-claimed invention. Shepard et al.'s teaching is to reduce the crystallinity of the end-product by a water-quenching method that freezes crystallization of the polymers (see column 15, lines 18-22).

In contrast, as noted above, the films according to the presently-claimed invention are biaxially-oriented, which implies a reorganization of the polymer chains as well as an increase in the degree of crystallinity of the polymers.

Additionally, Shepard et al. do not teach using a polyamide with as high a modulus as that of the polyamide of the presently-claimed invention. This is because polyamides with high modulus break or crack when the film is subjected to physical or thermal shock. Breaking and cracking are negative effects.

Applicant thus respectfully submits that, the invention, as claimed in present claims 59 and 63, is not obvious in view of Shepard et al.

Claim 58 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Shepard et al. in view of Publication No. WO 97/48554 by Mergenhagen et al. ("Mergenhagen et al.") or U.S. Patent Publication No. 20030157355 by Wallace et al.

("Wallace et al.")

First, neither Mergenhagen et al. nor Wallace et al. address the problem of preventing curling. Second, neither Mergenhagen et al. nor Wallace et al. teach the use of biaxially oriented films and polyamide with high modulus. Hence, even by combining the teaching of Shepard et al. with the teaching of Mergenhagen et al. or that of Wallace et al., a skilled artisan would not have obtained any teaching that would anticipate the presently-claimed invention.

Claim 60 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Shepard et al. in view of U.S. Patent No. 5,558,930 to DiPoto ("DiPoto").

Applicant respectfully notes that DiPoto does not deal with limiting curling, but with a process for producing multi-layer co-extruded films. Hence, the combination of Shepard et al.'s teaching with that of DiPoto does not give any useful teaching to a skilled artisan regarding how to limit curling. Also, DiPoto's process leads to an oriented film. There is no reason why a skilled artisan would have been motivated to produce Shepard et al.'s films by using DiPoto's process because the latter is not suitable for obtaining films having the features taught by Shepard et al.

Claims 49, 51, and 63 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,843,502 to Ramesh ("Ramesh '502 ") in view of U.S. No. 5,202,162 to Hart, Jr. et al. ("Hart, Jr. et al.").

Claims 52-55, 57, and 64-67 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ramesh '502 in view of Hart, Jr. et al. as applied to claims 49, 51, and 63, and further in view of U.S. Patent No. 4,561,108 to Kamp ("Kamp").

Claim 56 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Ramesh '502 in view of Hart, Jr. et al. also as applied to claims 49, 51, and 63, and

further in view of U.S. Patent No. 5,534,277 to Ramesh et al. (Ramesh et al. '277).

Claim 61 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Ramesh '502 in view of Hart, Jr. et al. also as applied to claims 49, 51, and 63, and further in view of Kamp, DiPoto, and U.S. Patent No. 6,148,587 to McDonald et al. ("McDonald et al.").

Finally, claim 62 has been rejected under §35 U.S.C. 103(a) as being unpatentable over Ramesh '502 in view of Hart, Jr. et al. also as applied to claims 49, 51, and 63 above, and further in view of Kamp, DiPoto, and U.S. 6,245,437 to Shiiki et al.

Ramesh '502 describes a multilayer film to be used in cook-in packaging for food products (in particular, fatty meat) (see column 2, lines 47-51). The packaging film is capable of conforming to the packaged food product and forming a tightly fitting package around it (see column 1, lines 35-39).

While the presently-claimed invention relates to a packing film for food products rich in fats, the claimed film is used in a field different from the cook-in applications described in Ramesh '502.

Ramesh '502 is silent regarding how to solve the problem of curling. Therefore, there is no useful teaching is given by Ramesh '502 in connection with how to prevent curling. Besides, in order to minimize curling according to the presently-claimed invention, a barrier layer (i.e., the polyamide) having a high Young modulus is employed. Thus, the minimum value required to achieved the desired result is relevant. Ramesh '502 neither teaches nor hints that polyamides suitable for the purpose of presently-claimed invention exhibit yield points greater than 25 MPa and elastic moduli greater than 3500 MPa, as in the presently-claimed invention.

It is true that Ramesh '502 describes films with two or more layers. It is worth noting, however, that starting from the films taught by Ramesh '502, a skilled artisan could only have arrived, if at all, at the film discussed at paragraph 34 of the Office Action after making a number of choices. The skilled artisan would not have been motivated to make those choices required to obtain a film that does not curl. This is because there is no suggestion in Ramesh '502 that would have led a skilled artisan, seeking to reduce curling, to select polymers and features that are not indicated as preferable by Ramesh '502.

For example, the films according to Ramesh '502 are preferably at least partially cross-linked (see column 5, lines 43-44). Cross-linking reduces curling, but does not make the film recyclable. Ramesh '502 does not suggest how to prevent curling without cross-linking.

In contrast, the claimed films are not cross-linked, because cross-linking prevents a film from being recycled.

Ramesh '502 teaches that an eight-layer film may be biaxially oriented (see column 4, line 21-column 5, line 11 and, in particular, column 5, lines 4-5). However, the same teaching is not given in connection with seven-layer films. In contrast, the claimed seven-layer films are biaxially oriented.

Hart et al. and Kamp appear to be cited in the Office Action because they disclose ionomeric copolymers. Details of ionomeric copolymers are useful but are not particularly relevant. The most relevant teachings lacking in Ramesh '502, as above, are not provided by either Hart et al. or Kamp.

Hart et al. disclose a coating composition to be used in screen processes for the decoration of ceramic surfaces. Kamp discloses a food container including an

interlocking closure fastening device.

In short, neither Hart et al. nor Kamp provide any useful teaching regarding how to minimize or prevent curling, what type of polyamide is suitable for such a purpose, the number of layers in a film, orientation, or cross-linking.

Thus, even if a skilled artisan had possession of the teaching of Ramesh '502 in view or of Hart et al. and/or Kamp, he or she would not have arrived at the films of the presently-claimed invention.

Like Ramesh '502, Ramesh et al. '277 relates to cook-in applications and is silent regarding how to prevent curling.

Ramesh et al. '277 teaches to blend crystalline polyamides with ionomers as a way to control various properties of a film. This references teaches, however, that such a blend is used to form also the external layer, i.e. layer 401 in the seven-layer film (see column 4, lines 65-67). In contrast to the teaching of Ramesh et al. '277, the film of the presently-claimed invention has an external polyamide layer formed by a single type of polymer. Disrupting crystallinity of the external layer would result in a layer exhibiting an undesired reduced gas-barrier effect. In other words, Ramesh et al. '277 provides only a partial teaching. In fact, Ramesh et al. '277 provides a diametrically opposite teaching to that useful for obtaining a film exhibiting the features of the presently-claimed invention. Moreover, Ramesh et al. '277 does not bridge the gap between the presently-claimed invention and the teaching provided by the combination of Ramesh '502 and Hart et al.

McDonald et al. discloses a bag formed by panels. It is taught therein that polymers suitable as a gas barrier layer suitable for use in heat-shrinkable multilayer films are polyamide and polyester. However, this teaching does not bridge the gap



between the presently-claimed invention and the combined teachings of Ramesh '502 and Hart et al. This gap is not bridged even if the teachings provided of Kamps and DiPoto are taken into consideration, for the reasons explained above.

Shiki et al. disclose a composite gas barrier film and teach polymers acting as oxygen barriers. However, Shiki et al.'s teaching does not bridge the gap between the presently-claimed invention and the teaching provided by the combination of Ramesh '502 and Hart et al., even if the latter are combined with Kamp and DiPoto.

In view of the foregoing, Applicant respectfully submits that the presently-claimed invention is not obvious in view of the cited references.

#### **Rejections Under 35 U.S.C. §112**

Claims 49 and 51-67 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Office Action indicates at paragraph 89, that "as polyamides are not conventionally used as moisture or steam barriers-since the polymers absorb water-it is not clear in what way Applicant intends for the layers to act as barrier to aqueous steam."

Layers C, E and G are made up of the polyamide polymers that possess a structural organization that results in remarkable mechanical properties remarkably different from those of polyamides used in known films. These differences are related to the different gas barrier effect.

Applicant respectfully submits that the rejections at paragraphs 90-92 and 94 of the Office Action are moot in view of the current amendments to the claims.

Examiner's rejections at paragraphs 93 and 95 are respectfully traversed.

LLDPE is commonly made by copolymerization of ethylene with longer-chain olefins, such as butene-1, 1-hexene and 1-octene. Applicant respectfully directs the Examiner to the attached page taken from *Handbook of Thermoplastics* by Olagoke Olabisi (CRC Press, 1997). In view this common knowledge, applicant respectfully requests the Examiner to accept the wording claims 58 and 59 as currently presented.

### **Conclusion**

Accordingly, the Applicant believes that all claims in the case are now in condition for allowance and favorable action is respectfully requested. No new matter has been added. Should there be any issues that have not been addressed to the Examiner's satisfaction, Applicant invites the Examiner to contact the undersigned attorney.

If any additional fees are due in connection with this response, please charge such fees to Deposit Account No. 14-1431.

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